

lagen type II, collagen type I, and proteoglycans. Reduction in the titers of the autoantibodies, or a delay in the appearance of visual signs of arthritis, are indications of efficacy. Liposomes are tested in a range of about 10–400 μ g of carbohydrate equivalent per kg body weight. In the present experiment, liposomes are tested in a range of about 10–400 μ g of carbohydrate equivalent per kg body weight per administration, or an equal number of control liposomes.

Other established animal models are implemented in the testing of liposomes for the treatment of additional clinical conditions of interest applying the methods and strategies discussed above.

All publications and patents mentioned in the above specification are herein incorporated by reference. Various modifications and variations of the described method and system of the invention will be apparent to those skilled in the art without departing from the scope and spirit of the invention. Although the invention has been described in connection with specific preferred embodiments, it should be understood that the invention as claimed should not be unduly limited to such specific embodiments. Indeed, various modifications of the described modes for carrying out the invention which are obvious to those skilled in pharmacology, chemistry, biochemistry, and molecular biology or related fields are intended to be within the scope of the following claims.

We claim:

1. A lipid assembly for inhibiting the binding between a first cell having a receptor and a second cell having a ligand for said receptor, comprising one or more lipid assemblies, wherein said one or more lipid assemblies comprise:

- a) lipid monomers, wherein 25–95% of said lipid monomers are unpolymerized;
- b) 5–50% surface exposed negatively charged oxyacid groups present on said lipid monomers of said lipid assemblies, wherein said surface exposed negatively charged oxyacid groups meet the anionic binding requirement of said receptor; and
- c) 5–20% surface exposed carbohydrates which selectively bind to said receptor.

2. The lipid assembly of claim 1, wherein said surface exposed negatively charged oxyacid groups are selected from the group consisting of carboxyl groups and groups of the form $(XO_n)(O^-)_p$ where $n+p>2$ and X is an atom capable of binding three or more oxygen atoms.

3. The compositions of claim 2, wherein said X is an atom selected from the group consisting of sulphur and phosphorus.

4. The lipid assembly of claim 1, wherein said one or more surface exposed negatively charged oxyacid groups comprise one or more carboxylate head groups of a fatty acid molecule.

5. The lipid assembly of claim 1, wherein said one or more surface exposed negatively charged oxyacid groups comprise one or more phosphate head groups of a fatty acid molecule.

6. The lipid assembly of claim 5, wherein said one or more phosphate head groups comprises a phosphate head group selected from the group consisting of cardiolipin and dioleoylphosphatidic acid head groups.

7. The lipid assembly of claim 1, wherein said one or more surface exposed negatively charged oxyacid groups comprise one or more sulfate head groups of a fatty acid molecule.

8. The lipid assembly of claim 7, wherein said one or more sulfate head groups comprises 1,4-dihexadecyl ester of sulfosuccinic acid.

9. The lipid assembly of claim 1, wherein said one or more surface exposed carbohydrates comprise neutral carbohydrates.

10. The lipid assembly of claim 9, wherein said one or more surface exposed neutral carbohydrates are covalently attached to said lipid monomers.

11. The lipid assembly of claim 9, wherein said neutral carbohydrates are selected from the group consisting of maltose and lactose.

12. The lipid assembly of claim 1, wherein said one or more surface exposed carbohydrates are covalently attached to said lipid monomers.

13. The lipid assembly of claim 1, wherein said receptor comprises selectin.

14. The lipid assembly of claim 13, wherein said selectin is selected from the group consisting of P-selectin, L-selectin, and E-selectin.

15. The lipid assembly of claim 1, wherein said receptor is selected from the group consisting of lectins, heparin, heparan sulfate, gangliosides, glycans, glycoproteins, and glycolipids.

16. A method for inhibiting the binding between a first cell having a receptor, and a second cell having a ligand for said receptor, comprising:

- a) providing:
 - i) a sample containing said first cell and said second cell;
 - ii) one or more lipid assemblies, wherein said one or more lipid assemblies comprise:
 - 1) lipid monomers, wherein 25–95% of said lipid monomers are unpolymerized;
 - 2) 5–50% surface exposed negatively charged oxyacid groups present on said lipid monomers of said lipid assemblies, wherein said surface exposed negatively charged oxyacid groups meet the anionic binding requirement of said receptor; and
 - iii) one or more surface exposed carbohydrates which selectively bind to said receptor; and
- b) exposing said lipid assemblies to said first cell.

17. The lipid assembly of claim 16, wherein said 5–50% surface exposed negatively charged oxyacid groups are selected from the group consisting of carboxyl groups and groups of the form $(XO_n)(O^-)_p$ where $n+p>2$ and X is an atom capable of binding three or more oxygen atoms.

18. The compositions of claim 17, wherein said X is an atom selected from the group consisting of sulphur and phosphorus.

19. The method of claim 16, wherein said first cell and said second cell are involved in cell-cell interactions selected from the group consisting of cell adhesion and cell migration.

20. The method of claim 16, wherein said one or more surface exposed carbohydrates comprise neutral carbohydrates.

21. The method of claim 20, wherein said one or more surface exposed neutral carbohydrates are covalently attached to said lipid monomers.

22. The method of claim 20, wherein said neutral carbohydrates are selected from the group consisting of maltose and lactose.

23. The method of claim 16, wherein said receptor is selected from the group consisting of P-selectin, L-selectin, E-selectin, lectins, heparin, heparan sulfate, gangliosides, glycans, glycoproteins, and glycolipids.

24. A composition for inhibiting the binding between a first cell having a receptor and a second cell having a ligand for said receptor, comprising one or more lipid monomers,